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## Case report

## Pneumonia presenting with lower right abdominal pain and migratory polyarthritis

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## ABSTRACT

The clinical presentation of community acquired pneumonia (CAP) in adults includes mainly symptoms from the respiratory system, whereas CAP is considered as a main cause of abdominal pain in pediatric patients.

We present the case of a patient, who was admitted to our hospital due to abdominal pain that deteriorated progressively and radiated to the lumbar region. The clinical examination revealed decreased breath sounds at the right lung base after 72 h, while the chest X-ray showed pneumonia of the right lung base. The blood culture isolated *Streptococcus pneumoniae*, and the patient received penicillin according to the results of the antibiogram. In addition, the patient developed symptoms of migratory arthritis, which resolved after 48 h.

CAP should be included in the differential diagnosis of abdominal pain in adult patients. Furthermore, the hematogenous spread of *S. pneumoniae* may be associated with the development of migratory arthritis.

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## 1. Introduction

Pneumonia is a known cause of abdominal pain in cases of pediatric patients.<sup>1,2</sup> On the contrary, the general practitioner tends to associate community acquired pneumonia with chest symptoms.<sup>3</sup> We describe the case of an informed consenting patient who presented with abdominal pain and was subsequently found to have community acquired pneumonia, which associated with asymmetric migratory polyarthritis. The Ethics Committee of the Sismanogleio Hospital has approved the present study.

## 2. Case presentation

A 68-year-old female presented with a 3-days long abdominal pain with radiation to the lower lumbar area, which progressively deteriorated. The patient's personal history included torn meniscus, osteonecrosis of the right knee, pelvis fracture since 1995 and appendectomy.

On presentation, she specifically complained of diffuse abdominal pain, while the findings of the clinical examination were fever until 38.3°C and positive Giordano's sign on the left. The patient's

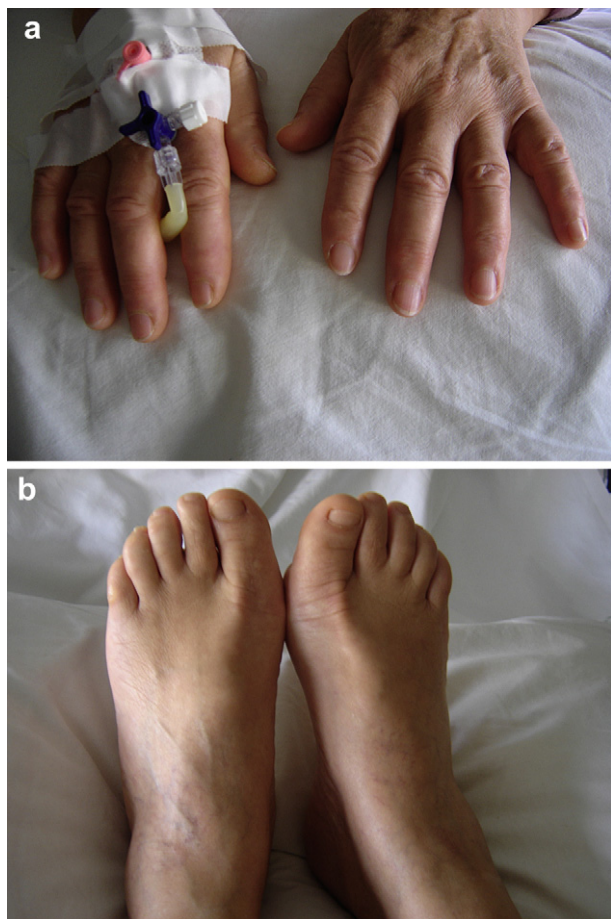
blood pressure was 128/62 mmHg, with oxygen saturation value of 96% and 18 breaths per minute. The ultrasound showed only wall thickening of the intrahepatic bile ducts. The abdominal discomfort deteriorated within the next hours. The patient was found with positive rebound in the right abdominal side and pain in the lower right abdominal side. The X-ray computed tomography showed only a small hiatal hernia. Cefuroxime and metronidazole were intravenously administered, after the notification of a positive blood culture for gram-positive organisms. Subsequently, the abdominal pain resolved progressively and the body temperature decreased to normal levels. The patient developed diarrhea, during the second day of hospitalization, which lasted for 3 days. The clinical examination found decreased breath sounds on the right lung base, while the X-ray showed a consolidation in the same side, on the third day of hospitalization. *Streptococcus pneumoniae* was isolated from the blood culture and Penicilline G was administered based on the sensitivities of the antibiogram (MIC 0.006 µg/ml). Edema, pain and tenderness were observed inside the right brachial shoulder joint, during the fourth day of hospitalization. The symptoms migrated progressively to the left brachial shoulder joint, to the interphalangeal joints of the left and right hand, the interphalangeal joints of the left and then the right foot (Fig. 1a and b) and finally resolved up until the 6th day of hospitalization.

Among the results of the laboratory examinations, the urinalysis showed sterile pyuria with 80–90 white blood cells on her admission to the emergency station, and the subsequent tests were negative for pyuria. The blood test showed white blood cells

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**Fig. 1.** (a) Edema and pain of the interphalangeal joints of the left and right hand. (b) Edema and pain of the interphalangeal joints of the left and right foot.

within the normal levels on the admission (initially: 9.96 K/ $\mu$ L, 86.7% neutrophils – finally: 5.65 K/ $\mu$ L, 54.3% neutrophils). Among the other markers of inflammation, only c-reactive protein was elevated at the admission and decreased progressively (initially 393.3 mg/L, finally 26.5 mg/L; normal values <6). The remaining biochemical markers remained within the normal levels, namely: urea 19–39 mg/dL, creatinine 0.7–0.9 mg/dL, total bilirubin 0.49–0.66 mg/dL, indirect 0.22–0.26 mg/dL direct 0.27–0.40 mg/dL, alkaline phosphatase 67–97 U/L, gamma-glutamyl transpeptidase 8–18 U/L, SGPT 19–32 U/L, SGOT 17–35 U/L, LDH 144–159 U/L, sodium 141–146 mEq/L, potassium 3.1–3.8 mEq/L.

The patient had normal temperature throughout their hospitalization, while the blood pressure was within the normal levels. The oxygen saturation ranged between 94 and 97% and the number of breaths was 16–18 per minute. The patient was discharged from the hospital after 7 days in a good clinical condition with instructions.

### 3. Comments

Community acquired pneumonia is usually associated with infection from *Streptococcus pneumoniae*, in up to 20–60% of all

cases with bacterial pneumonia.<sup>3</sup> Signs and symptoms are typically associated with cough, alterations in color of respiratory secretions, dyspnea, chest discomfort, fever or hypothermia and sweating. In addition, community acquired pneumonia might present with non-specific symptoms like fatigue, myalgia, anorexia, headache, as well as abdominal pain.<sup>3</sup> On the contrary, pneumonia is considered as the most frequent extra-abdominal cause of acute abdominal pain in children.<sup>1,2</sup> The lack of association of pneumonia with abdominal pain in adults results in unnecessary delay in the diagnosis and administration of appropriate treatment.

Apart from infections of the upper and lower respiratory tract,<sup>3</sup> *S. pneumoniae* is an unusual but not rare cause of bone and joint infections.<sup>4</sup> In fact, *S. pneumoniae* is responsible for up to 3–10% of cases of bacterial septic arthritis in adults.<sup>5</sup> Migratory polyarthritides is a frequent symptom in the primary care. The differential diagnosis includes infectious causes (e.g. Lyme disease, Chlamydia) reactive arthritis, palindromic rheumatoid arthritis, crystal induced arthropathy, as well as autoimmune diseases.<sup>6</sup> The development of migratory arthritis in the case of our patient may be attributed to the hematogenous seed of *S. pneumoniae*.

Concluding, community acquired pneumonia is a condition that should be taken into account in the differential diagnosis of abdominal pain in adults, in order to achieve immediate therapeutic intervention. In addition, the development of migratory arthritis might be associated with the bacteremia of *S. pneumoniae*.

### Conflicts of interest

The authors have no conflicts of interest.

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### Author contributions

Eleni Armeni: blood drawing, clinical examination of the patient, manuscript drafting

Vasiliki Mylona: supervision and coordination of the clinical and laboratory examinations as well as of the therapeutic interventions

George Karlis: manuscript drafting, clinical examination of the patient

Elias Makrygiannis: director of the Internal Medicine Department, final editing of the manuscript

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